



[4910-13-P]

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2019-0576; Product Identifier 2019-NM-049-AD]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The FAA proposes to adopt a new airworthiness directive (AD) for all The Boeing Company Model 747-400, 747-400F, 747-8F, and 747-8 series airplanes. This proposed AD was prompted by reports of dual flight management computer (FMC) cold starts during a critical flight phase such as takeoff and approach. This proposed AD would require an inspection to determine if certain software is installed, installation of FMC operational program software (OPS) and a software configuration check, and applicable concurrent requirements. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2019-0576.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2019-0576; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the regulatory evaluation, any comments received, and other information. The street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Nelson Sanchez, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th

St., Des Moines, WA 98198; telephone and fax: 206-231-3543; email:  
nelson.sanchez@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2019-0576; Product Identifier 2019-NM-049-AD” at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. The agency will consider all comments received by the closing date and may amend this NPRM because of those comments.

The FAA will post all comments, without change, to <http://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this proposed AD.

### **Discussion**

The FAA has received reports indicating that some operators experienced dual FMC cold starts during a critical flight phase such as takeoff and approach. A cold start is a computer reset that is equivalent to starting from an unpowered (cold) state. During a cold start, the computer is not available to perform its intended function. Dual FMC cold starts can result in a loss of flight critical data from flight deck displays during a high workload phase of flight. This condition, if not addressed, could reduce the flightcrew’s situational awareness, resulting in a loss of continued safe flight and landing.

### **Related Service Information under 1 CFR part 51**

The FAA reviewed Boeing Alert Requirements Bulletin 747-34A3119 RB, dated February 15, 2019; and Boeing Alert Requirements Bulletin 747-34A3125 RB, dated February 15, 2019. The service information describes procedures for installation of the FMC OPS, part number (P/N) HNP5A-AL11-9008, or later-approved software version, and a software configuration check, and applicable concurrent requirements (installing certain software and hardware). These documents are distinct since they apply to airplanes in different configurations.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

### **FAA's Determination**

The FAA is proposing this AD because the agency evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

### **Proposed AD Requirements**

This proposed AD would require an inspection to determine if certain software is installed, and if necessary, accomplishment of the actions identified in Boeing Alert Requirements Bulletin 747-34A3119 RB, dated February 15, 2019; and Boeing Alert Requirements Bulletin 747-34A3125 RB, dated February 15, 2019; described previously, except as discussed under "Differences Between this Proposed AD and the Service Information" and except for any differences identified as exceptions in the regulatory text of this proposed AD.

For information on the procedures and compliance times, see this service information at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2019-0576.

### **Explanation of Requirements Bulletin**

The FAA worked in conjunction with industry, under the Airworthiness Directive Implementation Aviation Rulemaking Committee (AD ARC), to enhance the AD system. One enhancement is a process for annotating which steps in the service information are “required for compliance” (RC) with an AD. Boeing has implemented this RC concept into Boeing service bulletins.

In an effort to further improve the quality of ADs and AD-related Boeing service information, a joint process improvement initiative was worked between the FAA and Boeing. The initiative resulted in the development of a new process in which the service information more clearly identifies the actions needed to address the unsafe condition in the “Accomplishment Instructions.” The new process results in a Boeing Requirements Bulletin, which contains only the actions needed to address the unsafe condition (i.e., only the RC actions).

### **Differences Between this Proposed AD and the Service Information**

The effectivity of Boeing Alert Requirements Bulletin 747-34A3119 RB, dated February 15, 2019; and Boeing Alert Requirements Bulletin 747-34A3125 RB, dated February 15, 2019; is limited to certain airplanes as identified in the service information. However, the applicability of this proposed AD includes all Boeing Model 747-400, 747-400F, 747-8F, and 747-8 series airplanes. Because the affected software versions are rotatable, the FAA has determined that these software versions could later be installed on

airplanes that were initially delivered with acceptable software, thereby subjecting those airplanes to the unsafe condition. We have confirmed with Boeing that the Accomplishment Instructions in Boeing Alert Requirements Bulletin 747-34A3119 RB, dated February 15, 2019, and Boeing Alert Requirements Bulletin 747-34A3125 RB, dated February 15, 2019, are applicable to the affected airplanes.

### **Costs of Compliance**

The FAA estimates that this proposed AD affects 115 airplanes of U.S. registry. The agency estimates the following costs to comply with this proposed AD:

#### **Estimated costs for required actions**

<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Records check or inspection	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$9,775
Software installation and configuration check	2 work-hours X \$85 per hour = \$170	*	\$170*	\$19,550*
Concurrent actions	Up to 119 work-hours X \$85 per hour = \$10,115	*	Up to \$10,115*	Up to \$1,163,225*

\*The FAA has received no definitive data that would enable the agency to provide parts cost-estimates for the software installation or concurrent actions specified in this proposed AD.

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: “General requirements.” Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This proposed AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes and associated appliances to the Director of the System Oversight Division.

### **Regulatory Findings**

The FAA has determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

**List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

**The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

**PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

**§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

**The Boeing Company:** Docket No. FAA-2019-0576; Product Identifier 2019-NM-049-AD.

**(a) Comments Due Date**

The FAA must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all The Boeing Company Model 747-400, 747-400F, 747-8F, and 747-8 series airplanes, certificated in any category.



**(d) Subject**

Air Transport Association (ATA) of America Code 34, Navigation.

**(e) Unsafe Condition**

This AD was prompted by reports of dual flight management computer (FMC) cold starts during a critical flight phase such as takeoff and approach. The FAA is issuing this AD to address dual FMC cold starts, which can result in a loss of flight critical data from flight deck displays during a high workload phase of flight. This condition, if not addressed, could reduce the flightcrew's situational awareness, resulting in a loss of continued safe flight and landing.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Definition**

For the purposes of this AD, later-approved software versions are only those Boeing software versions that are approved as a replacement for the applicable software identified in Boeing Alert Requirements Bulletin 747-34A3119 RB, dated February 15, 2019; or Boeing Alert Requirements Bulletin 747-34A3125 RB, dated February 15, 2019; and are approved as part of the type design by the FAA or The Boeing Company Organization Designation Authorization (ODA) after February 15, 2019 (the issuance date of Boeing Alert Requirements Bulletin 747-34A3119 RB; and Boeing Alert Requirements Bulletin 747-34A3125 RB).

**(h) Required Actions**

(1) For airplanes that have an original airworthiness certificate or export certificate of airworthiness issued on or before the effective date of this AD: Within 6

months after the effective date of this AD, inspect the FMC left and FMC right to determine if FMC operational program software (OPS) software, part number (P/N) HNP5A-AL11-9008, or later-approved software version, as defined in paragraph (g) of this AD, is installed. A review of airplane maintenance records is acceptable in lieu of this inspection if the part number of the FMC OPS can be conclusively determined from that review.

(2) If, during any inspection or records review required by paragraph (h)(1) of this AD, FMC OPS, P/N HNP5A-AL11-9008, or later-approved software version, as defined in paragraph (g) of this AD, is not found: Within 6 months after the effective date of this AD, do all applicable actions identified in, and in accordance with, the applicable Concurrent Requirements and Accomplishment Instructions of Boeing Alert Requirements Bulletin 747-34A3119 RB, dated February 15, 2019; or Boeing Alert Requirements Bulletin 747-34A3125 RB, dated February 15, 2019; as applicable.

Note 1 to paragraph (g): Guidance for accomplishing the actions required by this AD can be found in Boeing Alert Service Bulletin 747-34A3119, dated February 15, 2019, which is referred to in Boeing Alert Requirements Bulletin 747-34A3119 RB, dated February 15, 2019; and Boeing Alert Service Bulletin 747-34A3125, dated February 15, 2019, which is referred to in Boeing Alert Requirements Bulletin 747-34A3125 RB, dated February 15, 2019.

**(i) Parts Installation Limitation**

As of the effective date of this AD: Do not install FMC software unless it is FMC OPS, P/N HNP5A-AL11-9008 or later-approved software version, as defined in paragraph (g) of this AD.

**(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company ODA that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

**(k) Related Information**

(1) For more information about this AD, contact Nelson Sanchez, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; telephone and fax: 206-231-3543; email: nelson.sanchez@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

Issued in Des Moines, Washington, on July 29, 2019.

Dionne Palermo,  
Acting Director,  
System Oversight Division,  
Aircraft Certification Service.

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